

Melitaea arduinna (Lepidoptera: Nymphalidae): a new species for Serbia

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Summary. The discovery of the butterfly *Melitaea arduinna* (Esper, 1783) in Serbia is reported. This is the first record of this species for Serbia. The morphology is compared with that of the similar *Melitaea cinxia* (Linnaeus, 1758) and *M. telona* Fruhstorfer, 1908. The phytocenology of the habitat is portrayed and the distribution of the species in the Balkan Peninsula analysed. The degree of habitat endangerment for this species is discussed, and a proposal for the status of this species in Serbia is given.

Резиме. Описан је налаз *Melitaea arduinna* (Esper, 1783) у Србији. Ово је први налаз ове врсте у Србији. Упоредживани су морфолошки детаљи ове врсте са сродним врстама *Melitaea cinxia* (Linnaeus, 1758) и *Melitaea telona* Fruhstorfer, 1908. Описани су фитоценолошки услови станишта и анализирано је распрострањење врсте на Балканском полуострву. Разматрано је питање угрожености станишта врсте, дат је предлог статуса заштите врсте.



Figs. 1–4. *Melitaea arduinna* and some of its habitats in Serbia. 1.– Adult female at Grza River; 2.– Underside, same locality; 3.– Habitat of *Melitaea arduinna* at Grza River thermophile meadows in the vicinity of oak forest); 4.– Habitat at Rtanj Mt. (thermophile meadows in the vicinity of oak forest) (photographs P. Jakšić).

Samenvatting. *Melitaea arduinna* (Lepidoptera: Nymphalidae) een nieuwe soort voor Servië

Tijdens een faunistische studie in de jaren 2007–2009 werd de aanwezigheid van *Melitaea arduinna* (Esper, 1783) vastgesteld in Oost-Servië. Dit is de eerste melding van deze soort voor dat land. De morfologie wordt vergeleken met die van *Melitaea cinxia* (Linnaeus, 1758) en *M. telona* Fruhstorfer, 1908. De fytoecologie van deze soort en haar voorkomen in de Balkan worden besproken. De bedreiging van de habitat van deze soort wordt vermeld en een beschermingsstatus voor de soort wordt voorgesteld.

Résumé. *Melitaea arduinna* (Lepidoptera: Nymphalidae), une espèce nouvelle pour la Serbie

La présence de *Melitaea arduinna* (Esper, 1783) dans la Serbie est constatée lors d'une étude faunistique en 2007–2009. Il s'agit de la première mention de cette espèce en Serbie. La phytocologie de cette espèce et sa distribution dans les Balkans sont discutées, ainsi que les conséquences de la destruction de son biotope et le statut de protection de l'espèce.

Key words: *Melitaea arduinna* – Serbia – First record – Faunistics.

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Introduction

The Freyer's Fritillary, *Melitaea arduinna* (Esper, 1783) has a very local distribution in SE Europe (NW Greece, Bulgaria, FYR Macedonia, and Romania) and in S Russia and Asia (Caucasus Major, Turkey, W. Siberia, the Altai, the Alai, the N. Tian-Shan, the Dzhungarsky, Alatau, Tarbagatai, and Saur Mts.).

Data on its distribution in the Balkan Peninsula are sporadic. The first data on its presence were given by Freyer (1839) for the Rhodopi Mt. in Bulgaria. According to present knowledge this species was recorded from only three localities: Vrška Chuka, Sbornovo and Poda (Abadjiev 2001). Data on its presence in Macedonia (Zelenikovo, Katlanovo, Bitola) were given by Thurner (1964) and for Greece (widespread in 12 localities) by Pamperis (1997). Data on its distribution in Romania were sporadic because material of *M. cinxia* (Linnaeus, 1758) (Câpâlnaş, Coşevita, Groşi, Pădurea and Bistra forest) was misidentified as *M. arduinna* (cf. Stanescu 2005).

In Eastern Serbia this species was not known (Živojinović 1950, Jakšić 1988, Zečević 2002), only preliminary information was given by Jakšić & Grozdanović (2007). Working on the project "Prime Butterfly Areas in Serbia", unexpectedly, we recorded this species in several localities in Eastern Serbia.

Material and methods

Specimens of *M. arduinna* were collected with butterfly nets in Eastern Serbia, in the period end of May – beginning of August 2007–2009. Samples are deposited in the author's collection. The preparation of genitalia slides was done in a standard procedure: maceration in potash, washing to remove potash, dissecting and cleaning, staining, dehydrating and hardening, and mounting in Canada balsam.

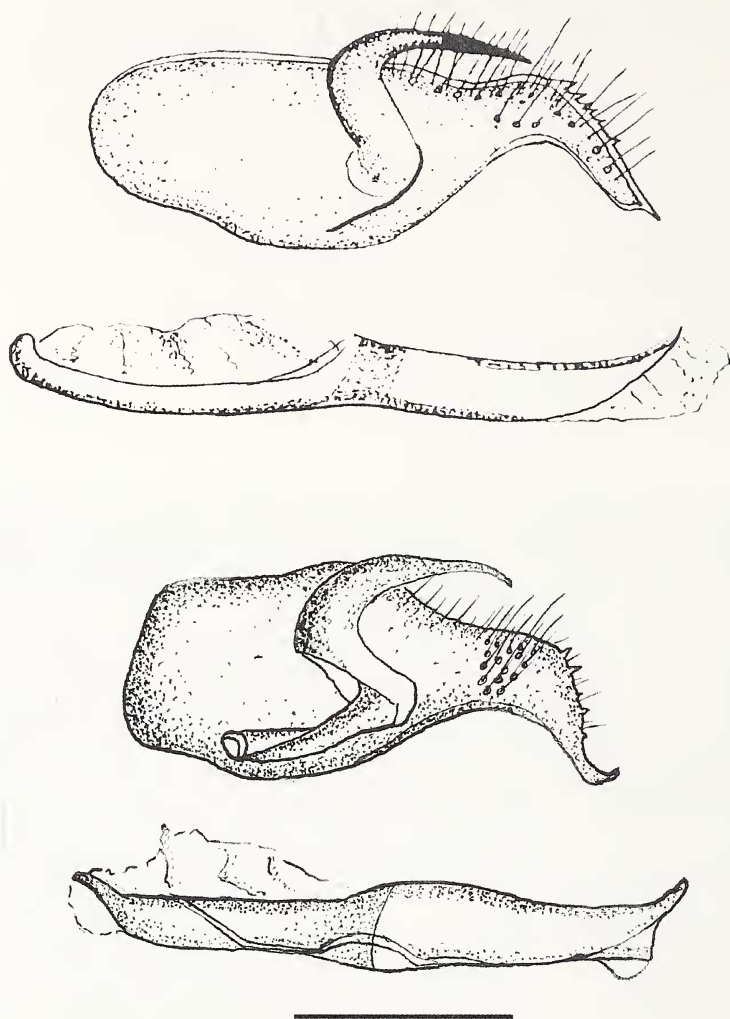


Fig. 5. Male genitalia of *Melitaea arduinna* from Pletvar (above) and Stol Mt. (below), Jakšić leg. and coll.; scale bar 1 mm.

Discussion

M. arduinna is closely related to *M. phoebe* ([Denis & Schiffer Müller], 1775) and to *M. cinxia*. In recent literature (Tolman & Lewington 1997), under the heading of *M. phoebe*, some particular subspecies are reported: *Melitaea phoebe ogygia* Fruhstorfer, 1908 [1907?], known with different synonyms: *telona*

Fruhstorfer, 1908 [1907?], *punica telona* Fruhstorfer, 1908 [1907?], *phoebe telona* Fruhstorfer, 1908 [1907?] and *kovacs* Varga, 1967. This taxon was recorded in Algeria, Greece, Middle East and it has a Ponto-Mediterranean distribution. Wing size, wing-shape and wing-markings, and particular characteristic marks on the underside of the hind-wing, as well as genitalia structures, show that our material belongs to *M. arduinna*. On the basis of these characteristics *M. arduinna* is separated from the similar species *M. phoebe* and from *M. cinxia*.

Deforestation of the Balkan beech forest at the present time has a negative impact on the water circulation in the area, thus lowering the quality of the habitat. Since the species was hitherto not known from Serbia, it was not included into the Red Data Book of Serbian Butterflies (Jakšić 2003). Having in mind the area of its distribution, fragility of the habitat, and size of population, it is obvious that *M. arduinna* must be ranked as an Endangered species (E) in Serbia. In the "Prime Butterfly Areas in Serbia" (Jakšić ed. 2008) *M. arduinna* is listed as one of the target species.

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